CONNOR BASICH

cbasich@cs.umass.edu, cbasich1@gmail.com
(818)-388-0291

EDUCATION

University of Massachusetts Amherst — *August 2017 - Spring 2023 (Ant.)*
PhD (In Progress) — Computer Science

University of Massachusetts Amherst — *August 2017 - May 2020*
Master of Science — Computer Science

Washington University in St. Louis — *August 2013 - May 2017*
Bachelor of Arts — Mathematics and Computer Science

HONORS AND AWARDS

- Passed the University of Massachusetts Amherst MS/PhD Portfolio with distinction.
- Recipient of the Victor Lesser Graduate Scholarship from University of Massachusetts Amherst.
- Graduated with distinction from the mathematics department at Washington University in St. Louis.
- Completed an undergraduate honors thesis in mathematics at Washington University in St. Louis.

PUBLICATIONS

Journal

- **Connor Basich**, Justin Svegliato, Kyle H. Wray, Stefan Witwicki, Joydeep Biswas, and Shlomo Zilberstein. "Competence-Aware Systems." Artificial Intelligence (AIJ). 2023.
- Sadegh Rabiee, **Connor Basich**, Kyle H. Wray, Shlomo Zilberstein, and Joydeep Biswas. "Competence-Aware Path Planning via Introspective Perception." In IEEE Robotics and Automation Letters (R-AL). 2022.

Conference

- Saad Mahmud*, **Connor Basich***, and Shlomo Zilberstein. "Semi-Autonomous Systems with Contextual Competence Awareness" Accepted to the International Conference on Autonomous Agents and Multi-Agent Systems (AAMAS) 2023.
- **Connor Basich**, John Peterson, and Shlomo Zilberstein. "Planning with Intermittent State Observability: Knowing When to Act Blind". In Proceedings of the IEEE International Conference on Intelligent Robots and Systems (IROS). 2022.
- **Connor Basich**, Joseph Russino, Steve Chien, and Shlomo Zilberstein. "A Sampling Based Approach to Robust Planning for a Planetary Lander." In Proceedings of the IEEE International Conference on Intelligent Robots and Systems (IROS). 2022.
- Daniel Wang, Joseph Russino, **Connor Basich**, and Steve Chien. "Analyzing the Efficacy of Flexible Execution, Replanning, and Plan Optimization for a Planetary Lander." In Proceedings of the International Conference on Automated Planning and Scheduling (ICAPS). 2022.
- Justin Svegliato, **Connor Basich**, Sandhya Saisubramanian, and Shlomo Zilberstein. "Metareasoning for Safe Decision Making in Autonomous Systems." In Proceedings of the IEEE International Conference on Robotics and Automation (ICRA). 2022.
- Samer B. Nashed, Justin Svegliato, Matteo Brucato, **Connor Basich**, Rod Grupen, and Shlomo Zilberstein. "Solving Markov decision processes with partial state abstractions." In Proceedings of the IEEE International Conference on Robotics and Automation (ICRA). 2021.
- **Connor Basich**, Justin Svegliato, Allyson Beach, Kyle H. Wray, Stefan Witwicki, and Shlomo Zilberstein. "Improving competence via iterative state space refinement." In Proceedings of the IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS). 2021.
- **Connor Basich**, Justin Svegliato, Kyle H. Wray, Stefan J. Witwicki, Joydeep Biswas, Shlomo Zilberstein. "Learning to Optimize Autonomy in Competence-Aware Systems." In Proceedings of the International Conference on Autonomous Agents and Multiagent Systems (AAMAS). 2020.
- Sandhya Saisubramanian, **Connor Basich**, Shlomo Zilberstein and Claudia V. Goldman. "Satisfying Social Preferences in Ridesharing Services." In Proceedings of the IEEE Intelligent Transportation Systems Conference (ITSC). 2019.

Workshop

- **Connor Basich**, Daniel Wang, Joseph A. Russino, Steve Chien, and Shlomo Zilberstein. "A Sampling-Based Optimization Approach to Handling Environmental Uncertainty for a Planetary Lander." In Proceedings of the ICAPS Workshop on Planning and Robotics. 2021.
- **Connor Basich**, John Peterson, and Shlomo Zilberstein. "Planning with Inconsistent Sensory Feedback: Knowing When to Act Blind." In Proceedings of the IJCAI Workshop on Robust and Reliable Autonomy in the Wilds. 2021.
- Justin Svegliato, **Connor Basich**, Sandhya Saisubramanian, and Shlomo Zilberstein. "Using Metareasoning to Maintain and Restore Safety for Reliably Autonomy." In Proceedings of the IJCAI Workshop on Robust and Reliable Autonomy in the Wilds. 2021.
- **Connor Basich**, Justin Svegliato, Kyle Hollins Wray, Stefan J. Witwicki, and Shlomo Zilberstein. "Improving Competence for Reliable Autonomy". In Proceedings of the ECAI Workshop on Agents and Robots for reliable Engineered Autonomy. 2021.
- Sandhya Saisubramanian, **Connor Basich**, Shlomo Zilberstein and Claudia V. Goldman. "The Value of Incorporating Social Preferences in Dynamic Ridesharing." In Proceedings of the ICAPS Scheduling and Planning Applications Workshop (SPARK). 2019.

Position Papers

- **Connor Basich**, Joydeep Biswas, and Shlomo Zilberstein. "Competence-Aware Autonomy: An Essential Skill for Robots in the Real World." AAAI Bridge Session on AI and Robotics (AI-ROB). 2023.

Papers in Submission

- **Connor Basich***, Saad Mahmud*, and Shlomo Zilberstein. "Learning Constraints on Autonomous Behavior from Proactive Feedback". In Submission to the IEEE International Conference on Intelligent Robots and Systems (IROS). 2023.

Patents

- **Connor Basich**, Kyle Hollins Wray, Stefan J. Witwicki, and Shlomo Zilberstein. "Introspective Competence Modeling for AV Decision Making." US Patent. 2021.

PROFESSIONAL EXPERIENCE

Resource-Bounded Reasoning Laboratory
Research Assistant — *September 2017 -*

- Developed robust decision-making models for safety-critical domains such as self-driving cars and rescue robots.
- Performed extensive testing of different state-of-the-art planning algorithms on multiple simulated domains.
- Designed a novel heuristic for search based planning in semi-observable domains that significantly outperformed both offline and online state-of-the-art POMDP solvers.
- Significant collaboration experience with multiple partners from Industry.
- Extensive experience reviewing and analyzing research literature as well as giving research talks.
- Led and organized lab meetings and discussions to expand on research topics, discuss new and relevant literature, and support lab research development.

Jet Propulsion Laboratory
JPL Affiliate — *August 2020 - October 2022*
Summer Research Intern — *May 2020 - August 2020*

- Collaborated with JPL's Artificial Intelligence group to continue research on the Europa Lander mission concept, culminating in a conference paper at the International Conference on Intelligent Robots and Systems.
- Worked in JPL's Artificial Intelligence group on the proposed Europa Lander mission concept to develop algorithms for improving the robustness and efficiency of on-board planning and scheduling under severe problem constraints.
- Developed a novel scheduling procedure that outperformed existing baseline approaches across multiple simulated mission scenarios on a realistic Europa Lander simulator, particularly in off-nominal mission scenarios.
- Designed and implemented a plan evaluator that efficiently evaluated plans under stochastic execution.
- Designed and implemented a plan visualizer that enabled easy examination of plans under stochastic execution.

Alliance Innovation Laboratory Silicon Valley
Seasonal Research Intern *June 2019 - August 2022*

- Worked in the autonomous mobility team on a project developing proprietary robust and reliable models for the decision-making process of self-driving cars.
- Designed and implemented proprietary decision-making software for a fully operational self-driving car prototype and provided ongoing technical support through the development of the self-driving car prototype.
- Performed testing and validation of software both in simulation and on real roads.
- Collaborated with multiple members of the Lab during regular meetings to devise directions and endeavors for future research and development.

The Boeing Company
Software Engineer *June 2016 - August 2016*

- Designed and implemented a proprietary program to autonomously identify and report errors inside a visual simulator for flight simulations, significantly reducing the number of dedicated man-hours required.
- Performed extensive benchmarking on a series of hardware and software systems.

ADDITIONAL EXPERIENCE

Teaching and Mentorship Experience

- Supported multiple PhD students as a senior lab member on advancing their own research, both in developing new research ideas, and executing on their research ideas.
- Supervised masters students on their research projects on dynamic ride-sharing and robot reliability.
- Mentored undergraduate students in research project on STRIPS based planning visualization and probabilistic planning.
- Teaching assistant for the graduate Artificial Intelligence course (COMPSCI 683) at UMass Amherst (2019).
- Panel moderator at the UMass Amherst PhD Candidate Friday event (2019-2022).
- Student host at the UMass Amherst PhD Candidate Friday event (2018-2021).
- Worked with a non-profit organization (9Dots) to help teach under-served youths in Los Angeles coding, web development, and game development.

Conference Reviewing Experience

- International Conference on Neural Information Processing Systems (NeurIPS)
- International Conference on Intelligent Robots and Systems (IROS)
- Intelligent Transportation Systems Conference (ITSC)

TECHNICAL SKILLS

Programming (Main)	Python, Julia, C++
Programming (Other)	C#, C, Javascript
Robotics	ROS, rospy
Machine Learning	Scikit-Learn, Pandas, PyTorch
Other Libraries	Numpy/Scipy, POMDPs.jl